

## Appendix D

### Economic, Social and Regional Considerations

#### **D-1. Background.**

a. Introduction. This appendix covers economic and social considerations not addressed elsewhere in this regulation. Guidance for estimating NED benefits is provided in Appendix E, Civil Works Missions and Evaluation Procedures, where the evaluation procedure for each project type is presented in its mission context. Some aspects of economic evaluation, and of planning generally, are common to every mission; those aspects are covered in this appendix.

b. Economic Considerations. Economic considerations which cut across missions and projects include such aspects as the proper use of interest rates, how to allocate costs among project purposes, how to best estimate current project benefits, how to evaluate other direct benefits, and other economic evaluation procedures.

c. Social Considerations. The social considerations which cut across various missions and projects include such aspects as the evaluation of unemployed and underemployed labor, evaluation of urban and community impacts such as life, health and safety factors, estimations of displacement, evaluations in changes to long-term productivity or real income, evaluations in changes in energy requirements and conservation, evaluations of changes in educational, cultural or recreational opportunities, evaluations of changes in emergency preparedness.

#### **D-2. Other Direct Benefits.**

a. Purpose. This section provides a definition of other direct benefits and procedural guidance for the evaluation of other direct benefits attributable to water resources plans and projects. The other direct benefits to be included in the NED benefit evaluation are the incidental effects of a project that increase economic efficiency by increasing the output of intermediate or final consumer goods over and above the direct outputs for which the plan is being formulated.

b. Conceptual Basis. Other direct benefits are incidental to the primary purposes of water resource projects. Primary purposes of projects are those purposes for which the alternative plans are formulated. Other direct benefits derive from incidental increases in outputs of goods and services or incidental reductions in production costs.

c. Planning Setting. Standard planning procedures involve comparison of the with project

condition to the without project condition. In considering other direct benefits, define the boundary of direct influence of the plan. Economic efficiency gains to firms in production and satisfaction gains to consumers other than those identified as the direct beneficiaries of primary project purposes should be valued and measured as other direct benefits.

(1) Without Project Condition. This refers to the forecasted future economic and social conditions expected to exist without implementation of the plan. The without project condition is the projection of output and production levels and costs of production likely to be achieved in the absence of a plan. It should be emphasized that the without project condition does not necessarily mean “no action”; indeed, there may be projects or initiatives undertaken by others throughout the period of analysis which could have a bearing on the future without project condition.

(2) With Project Condition. This refers to the future economic and social conditions expected to exist when the plan is fully implemented. The with project condition is the projection of output and production levels and the costs of production likely to be achieved with the plan.

d. Evaluation Procedure: General.

(1) When applicable, compute other direct benefits using the procedures of Appendix E and the remainder of this appendix. Some benefits, such as reduced water supply treatment costs, can be computed on the basis of reduced costs to consumers.

(2) Improvement in production possibilities of the private market sector as well as the nonmarket sector (some recreation, for example) are other direct benefits. Examples of other direct benefits are included in the following illustration. A large water storage project is to be located upstream on a main tributary of a river system that enters the ocean by a delta through an estuary. The direct output of the project is flood risk management for communities residing on floodplains along upper valleys of the tributary. One effect of regulating flow by reducing winter high and summer low flows is to increase the recreational potential of land and water in the lower reaches of the river system. A cooling of water temperatures and increased flow during summer increases fish and wildlife productivity; riparian habitats along lower water courses expand and increase in density; and salt water marshland receives less saline water in summer. As a result, there is an increase in dove and pheasant hunting as these wildlife populations increase. Opportunities for sport angling also increase as game fish productivity rises. Also, shrimp production benefits from the change to less saline water in the marshland, and commercial shrimp harvest increases, resulting in greater output at lower unit total cost to shrimp fishermen. Another incidental effect is the improvement in water quality to downstream users as turbidity is reduced in winter and water hardness is reduced in summer. Therefore, treatment costs are lower for firms and households. If the impoundment causes the recharge of groundwater basins in the vicinity of the dam site or along the stream course, these incidental effects are other direct benefits. Pumping costs could be reduced as well.

e. Evaluation Procedure: Problems in Application. The major problems encountered in the estimation of other direct NED benefits are the identification of the firms, industries, and

consumers who will be subject to these incidental effects caused by projects and plans. It must be emphasized that it is not practical or economic to trace out all direct effects.

(1) Determining the context or system within which the major incidental impacts might be experienced is a useful first step in identifying likely direct benefits worth measuring. The immediate watershed or the subsystem of a river system would constitute a relevant context. The delineation of geographical and economic market regions in which impacts are likely to be felt cannot usually encompass the whole regional economy in a highly industrialized area. Nevertheless, it is important to avoid delineating too small an area in which to search for possible effects.

(2) Another procedure for identifying likely impacts is tracing the hydrologic changes that will occur as a result of the project. For example, flows downstream and in other parts of a river system can be changed in quantities and qualities; the water's chemical and physical characteristics, oxygenation, turbidity, temperature, etc. can undergo change that may impact on fish and wildlife resources and on the production functions of firms and the satisfaction of consumers.

f. Evaluation Procedure: Data Sources. An assessment of the current situation and the economic efficiency of potentially affected firms and individuals usually entails the collection from primary sources of data on cost, production function, and firm capacity. Studies of industrial structure and the interdependence of firms in the supply of various inputs and the use of outputs can provide valuable supplemental information.

g. Evaluation Procedure: Risk and Uncertainty. Other direct benefits are unique to each project design and its location, so the historical record of data is of limited usefulness. The risk and uncertainty attached to the hypothesized outcomes can be reduced by taking measures to reduce or mitigate the risk or to accept the risk. A physical description of other direct benefits, together with assessment of their relative (major or minor) significance, is an integral part of such a procedure. Nevertheless, these estimates may involve high degrees of risk and relative uncertainty, based as they are on the total mix of project outputs and the effect these mixes would have on stimulating increased productivity.

h. Report and Display Procedures. Other direct benefits should be identified by component and added onto the benefits of the benefit-cost analysis. The method used to value the benefits should be presented in the report. Provide a tabular breakdown of all other direct benefits claimed for the project.

### **D-3. NED Cost Evaluation Procedures.**

a. Purpose. This section defines the components of NED costs, as defined in the Principles and Guidelines, and provides procedures for the evaluation of NED costs (costs used for economic analysis) of structural and non-structural elements of water resources

plans and projects. NED costs and financial costs are often quite different from each other and need to be fully explained to project partners as well as the public. Financial costs, often referred as the outlays or implementation costs of the project, are generally one of several components of the NED costs and are reported in other settings such as in cost sharing agreements or for budgeting purposes. In contrast, NED costs reflect the true economic cost to society and can include financial costs, interest during construction, associated costs and other direct losses. Appendix E also provides guidance on classification of costs by project purpose, cost sharing requirements and potential credits to non-Federal sponsors.

b. Conceptual Basis.

(1) Project measures, whether structural or nonstructural, require the use of various resources. NED costs are the opportunity costs of resource use. In evaluating NED costs, resource use must be broadly defined to fully recognize scarcity as a component of value. This requires consideration of the private and public uses that producers and consumers are currently making of available resources or are expected to make of them in the future.

(2) The opportunity costs of resource use are usually reflected in the marketplace. When market prices adequately reflect total resource values, they are used to determine NED costs. When market prices do not reflect total resource values, surrogate values are used appropriately to adjust or replace market prices.

(3) Total NED cost is the market value of a resource plus other values not reflected in the market price of the resource; it therefore accounts for all private sector and public sector uses. Market price is used to reflect the private sector use of resources required for or displaced by a project, and surrogate value is used to reflect the public sector use.

(a) The market price approach relies on the interaction of supply and demand. Price is determined through transactions on the margin between knowledgeable and willing buyers and sellers, neither of whom are able to influence price by their individual decisions. Distortions in market price occur if one or more of the conditions of perfect competition is violated.

(b) The surrogate value approach involves the approximation of opportunity costs based on an equivalent use or condition. Surrogate values are frequently used in restricted markets and in non-market situations.

(4) Proper NED analysis requires that project NED costs and benefits be compared at a common point in time. Costs are calculated in annualized terms (see paragraph D-6).

c. Planning Setting. The basis for the evaluation rests in a thorough analysis of expected conditions in the future with a project and without a project. This requires identification of those resources that will be affected by a project; the current value of such uses is measured as the economic worth to the Nation of the services associated with those uses.

d. Evaluation Procedure: General.

(1) Resources required or displaced to achieve project purposes by project installation and/or operation, maintenance, repair, replacement and rehabilitation activities represent a NED cost and should be evaluated as such. Resources required or displaced to minimize adverse impacts and/or mitigate fish and wildlife habitat losses are also NED costs. Costs for features not required for project purposes, avoiding adverse effects caused by such features, and/or mitigating fish and wildlife habitat losses caused by such features are not project-related NED costs and should not be evaluated. Costs for features not required for project purposes will generally not be part of the Corps project.

(2) All NED costs shall be based on current costs adjusted by the project discount rate to the beginning of the period of analysis as defined in paragraph D-6. Compute all costs at a constant price level and at the same price level as used for the computation of benefits. Current costs shall be based on the price level at the time of the analysis. These costs will be updated in the year(s) the project is submitted for authorization and/or appropriations. Deferred costs will be discounted to the end of the installation period, using the applicable project discount rate. Costs incurred before the beginning of the period of analysis will be increased (i.e., to estimate future value) by adding compound interest at the applicable project discount rate from the date the costs are incurred to the beginning of the period of analysis. All NED costs will be converted to an annual equivalent value over the period of analysis.

(3) Project NED costs may be adjusted by an allowance for the salvage value of land improvements, equipment, and facilities that would have value for non-project uses at the end of the period of analysis. Significant salvage values of replaceable items (e.g., generators) will normally become adjustments to allowances for replacement costs.

e. Evaluation Procedure: Implementation Outlays. The NED costs of implementation outlays, which are developed in accordance with ER 1110-1-1302, include the costs incurred by the responsible Federal entity and, where appropriate, contributed by other Federal or non-Federal entities to construct, operate and maintain a project in accordance with sound engineering and environmental principles and place it in operation. These costs are the remaining post-authorization planning and design costs; construction costs; construction contingency costs; administrative services costs; fish and wildlife habitat mitigation costs; relocation costs; historical and archaeological salvage costs; land, water, and mineral rights costs; and operation, maintenance, repair, rehabilitation, and replacement costs.

(1) Preconstruction, Engineering and Design (PED) Costs. These costs are the direct cost for investigations, field surveys, planning, design, and preparation of specifications and construction drawings for structural and nonstructural project measures. In the evaluation procedure, these costs will be based on the actual current costs incurred by the responsible Federal entity for carrying out these activities for similar projects and project measures. They may be computed as a percentage of construction costs when there is a documented basis for the

rate used. Make adjustments when appropriate to reflect circumstances special to the project under consideration.

(2) Construction Costs. These costs are the direct cost of installing project measures. They should be based on the market value of goods and services required to install project measures, including those measures required for avoiding adverse environmental effects and public health and safety risks. They include the cost of purchased materials (including associated transportation costs); equipment rental or purchase; construction wages or salaries (including social security and fringe benefit costs); and contractors' management, supervision, overhead, and profit. These costs will be based on current contract bid items in the project area or on the current market value of purchased materials and services, etc.

(3) Construction Contingency Costs. These are project costs normally added to reflect the effects of unforeseen conditions on estimates of construction costs. They are not an allowance for inflation or for omissions of work items that are known to be required. They are included to cover unforeseen construction problems. These costs will vary with the intensity of the surveys and investigations performed, the variability of site conditions, and the type of project measures being installed. They may be computed as an appropriate percentage of estimated construction costs. If contingency costs are included in real estate costs, planners shall ascertain the basis for these contingent costs. To the extent that contingencies are meant to account for inflation, this effect shall be excluded from real estate costs for evaluation purposes. Only that portion of real estate contingency cost for which there is reasonable basis for anticipating uncertainty (condemnation costs may be an example) shall be included.

(4) Administrative Services Costs. These are the costs associated with the installation of project measures, including the cost of contract administration; permits needed to install the project measures; relocation assistance advisory services; administrative functions connected with relocation payments; review of engineering plans prepared by others; government representatives; and necessary inspection service during construction to ensure that project measures are installed in accordance with the plans and specifications. Base these costs on the actual current costs incurred by the responsible Federal entity for carrying out these activities for similar projects and project measures. These costs may be computed as a percentage of construction costs if there is a documented basis for the rate used. Make adjustments when appropriate to reflect unusual circumstances special to the project under consideration.

(5) Fish and Wildlife Habitat Mitigation Costs. These are the costs of mitigating losses of fish and wildlife habitat caused by project construction, operation, maintenance, repair, rehabilitation and replacement. The mitigation measures to be included in the project will be determined by the responsible Federal entity in coordination with Federal and State Fish and Wildlife Agencies as required by the Fish and Wildlife Coordination Act (Public Law 85-625). Installation of these mitigation measures should be concurrent with the installation of other project measures, where practical. These costs include all project outlays associated with the installation of mitigation measures, including preconstruction, engineering and design costs; construction costs; construction contingency costs; administrative services costs; relocation

costs; land, water, and mineral rights costs; and operation, maintenance, repair, rehabilitation, and replacement costs. These costs will be based on current market values and the actual current costs incurred by the Federal entity for carrying out these activities for similar mitigation measures.

(6) Relocation Costs. These are project costs associated with relocation of public highways and other publicly owned facilities, railroads, and utility lines. The relocation cost of publicly owned facilities (except highways), railroads and utility lines will be based on the costs of replacement in kind. In the case of highways, the relocation cost will be based on replacement that reflects the current traffic count and current standards of the owner, which may result in a justified improvement over the configuration of the existing roadway. The additional relocation cost of highways that are upgraded to increase their carrying capacity for project purposes such as recreation is also a project cost. The relocation cost of highways, railroads, and utility lines shall include all project outlays associated with their relocation, including planning and design costs; construction costs; construction contingency costs; administrative services costs; fish and wildlife habitat mitigation costs; land, water, and mineral rights costs; and historical and archaeological salvage costs. These costs will be based on current market values and the actual current costs incurred by the Federal entity for carrying out similar relocations.

(7) The requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646), as amended, including real property acquisition relocation payments as applicable to a displaced person, business, or farm operation. Such payments include moving and related expenses for a displaced person, business, or farm operation; financial assistance for replacement housing for a displaced person who qualifies and whose dwelling is acquired because of the project; and termination payments for dislocated businesses whose owners choose to close out. Base the NED cost of replacement housing on replacement in kind. (Costs over and above replacement in kind are treated as financial costs for non-project purposes.) Base these costs on current market values.

(8) Historical and Archaeological Salvage Operation Costs. These are project costs associated with salvaging artifacts that have historical or archaeological values as prescribed by the Preservation of Historic and Archaeological Data Act (Public Law 93-291). These costs will be based on the current market price of salvage operations carried on during construction.

(9) Land, Water, and Mineral Rights Costs.

(a) These NED costs include all costs of acquiring the land, water, and mineral rights required for installing, operating, maintaining, repairing, rehabilitating, and replacing project measures. They include all expenditures incurred in acquiring land, easements, rights-of-way leases, and water and mineral rights. Such costs include the cost of the land (or interest therein), water, and mineral rights minus salvage value; transactional costs including the cost of surveys incident to a sale, legal fees and transfer costs; and severance damage payments. These costs will be based on current market values and the actual current costs incurred by the Federal entity for carrying out similar land, water, and mineral rights acquisitions. The market value of easements

will be based on the difference in market value of land without the easement and with the easement.

(b) Some land, water, and mineral rights are owned by Federal, State, and local governments and have been committed to specific uses. The NED cost of using such resources for project purposes consistent with their committed uses will be based on the surrogate value of the public services provided by the resources. For example, if State-owned land committed to recreation use is to be used for project recreation development, its NED cost is not the market value of the land, but the value of the recreation services that would be provided by the land without the project. Public domain lands not committed to specific uses should be valued at the market value of comparable private land or a surrogate use value, or a combination if there are complementary uses.

(10) Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R) Costs. These costs represent the current value of materials, equipment, services, and facilities needed to operate the project and make repairs, rehabilitate, and make replacements necessary to maintain project measures in sound operating condition during the period of analysis. They include salaries of operating personnel; the cost of repairs, replacements, or additions; and an appropriate charge for inspection, engineering, supervision, custodial services, and general overhead. When operation, maintenance, repair, rehabilitation, or replacement will be performed by contract, the cost should include an allowance for contingencies and the costs of survey, planning design, and administrative services. These costs will be based on actual current costs incurred for carrying out these activities for similar projects and project measures. When the project is an addition to or extension of an existing project for which the costs and benefits are not included or otherwise involved in the project analysis, include only the additional cost of operation, maintenance, repair, rehabilitation, or replacement necessitated by the addition or extension to the existing project. Adjustments can be made when appropriate to reflect circumstances special to the project under consideration.

#### f. Reporting Requirements of Financial Costs or Implementation Outlays

Properly communicating the costs of projects is essential to the Corps, to project partners and to the Administration and Congress. Decision-makers need clear, accurate, and consistent representations of costs of such projects.

(1) Financial costs or implementation outlays represent the monetary outlays, both Federal and non-Federal, of constructing a project. They include design and construction outlays, transfer payments such as replacement housing payments as specified in 42 U.S.C. 4623 and 4624, and the value of lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas (LERRD) provided by non-Federal sponsors. This cost is developed in accordance with ER 1110-1-1302 and is typically presented in three ways: Estimated Cost (Price Level), Constant Dollar Cost (Price Level), and Total Project Cost.

(a) Estimated Cost (Price Level) is the initially developed cost estimate which includes contingencies. The effective price level date for Estimated Cost (shown in MONTH YYYY format) is usually the date of preparation of the cost estimate.

(b) Constant Dollar Cost (Price Level) is the Estimated Cost brought to the effective price level. The effective price level for Constant Dollar Cost (shown in MONTH YYYY format) is the date of the common point in time of the pricing used in the cost estimate. Constant Dollar Cost does not include inflation. Constant Dollar Cost at current price levels is the cost estimate used in feasibility reports and Chief's Reports for Congressional authorization.

(c) Total Project Cost is the Constant Dollar Cost fully funded with escalation to the estimated midpoint of construction. Total Project Cost (or Total Cost of Construction of general navigation features when dealing with navigation projects) is the cost estimate used in Project Partnership Agreements and Integral Determination Reports. Total Project Cost is the cost estimate provided non-Federal sponsors for their use in financial planning as it provides information regarding the overall non-Federal cost sharing obligation.

g. Interest during Construction. This represents the opportunity cost of capital incurred during the construction period. These are not generally considered to be financial costs, but are NED costs. The cost of a project to be amortized is the investment incurred up to the beginning of the period of analysis. The investment cost at that time is the sum of construction and other initial cost plus interest during construction. Cost incurred during the construction period should be increased by adding compound interest at the applicable project discount rate from the date the expenditures are incurred to the beginning of the period of analysis. This is comparable to the treatment of benefits that accrue during the construction period (see paragraph D-4c) and is performed to insure costs and benefits are evaluated on an equivalent time basis.

(a) All PED costs are included in project NED costs and are charged interest during construction. This includes any studies performed using PED funds (i.e., physical modeling, plans and specs, etc.) When performing economic updates, expended PED costs will be considered "sunk" and not included in the benefit-cost ratio. "Sunk costs" are defined as past costs that have already been incurred and cannot be recovered as a result of the water resource project. Appendix G contains more details on the requirements of post-authorization changes.

(b) Lands acquired are charged interest during construction from the date they are put to use for project purposes, or the date their non project use ceases, whichever is earlier. Through lease back or other arrangements these dates may differ from date of acquisition.

h.. Evaluation Procedure: Associated Costs. Associated costs are the costs of measures needed over and above project measures to achieve the benefits claimed during the period of analysis. For example, a channel deepening project may require landside upgrades to accommodate larger vessels, upon which the benefit estimates (in the form of lower transportation costs) are derived. Such costs may not be included in the financial outlays (e.g., General Navigation Features) and may not be part of the cost sharing for the project.

Nevertheless, they are treated as NED costs. Base associated costs on the current market prices of goods and services required for the installation of measures needed over and above project measures.

(1) Associated costs have often been handled through the self-liquidating cost concept. A self-liquidating cost is the cost of a particular type of asset that can be operated in such a way that generates revenues and repays the money spent to acquire it (e.g. docking space, container crane usage fees). The use of self-liquidating costs is limited to those cases in which appropriate associated costs are netted out of the total NED costs of the project. .

(2) It is preferred that associated costs be explicitly treated as NED project related costs, and appear as costs in benefit-cost ratios. Where the concept of self-liquidating costs has been used to account for associated costs this procedure may continue to be used as long as:

- (a) The appropriate associated costs are subtracted from the NED costs, and
- (b) The associated costs are identified and the netting process documented in project reports.

i. Evaluation Procedure: Other Direct Costs.

(1) These are the costs of resources directly required for a project or plan, but for which no implementation outlays are made. Consequently, they are included in the economic costs of a plan but not in the financial costs. These costs may be important for both structural and nonstructural plans. For example, a zoning plan to preserve floodplain values by restricting development would have as a cost the value of with project development opportunities foregone. A plan that responds to demand growth by reallocating existing outputs from low value uses to high value uses through pricing mechanisms (i.e., raising the price of existing outputs) would have as its major cost the value of the outputs to the users who forego its use as a result of its higher price. On the other hand, a structural project may displace recreation use at the project site and the value of foregone recreational opportunities is a direct cost. Whenever possible, compute these costs using the procedures set forth for computing benefits in Appendix E. If these costs are not quantified, they should be otherwise identified.

(2) Other direct costs also include uncompensated NED losses caused by the installation, operation, maintenance, repair, rehabilitation, or replacement of project or plan measures. All uncompensated net losses in economic outputs (not transfers) that can be quantified shall be considered project NED costs. The evaluation of such costs requires an analysis of project effects both within and outside the project area.

(3) Examples of other direct costs include increased downstream flood damages caused by channel modifications, dikes, or the drainage of wetlands; increased water supply treatment costs caused by irrigation return flows; erosion of land along streambanks caused by dams that prevent the replenishment of bedload material; loss of land and water recreation values through

channel modifications, reduced instream flow due to consumptive use of water by irrigated agriculture, or inundation by reservoirs; increased transportation costs caused by rerouting traffic around a reservoir; new or increased vector control costs caused by the creation of wetlands; and decreased output or increased cost per unit of output of private firms caused by project-induced decreases in raw materials. When applicable, compute such costs using the procedures for computing benefits contained in Appendix E and this Appendix. Some costs, such as increased water supply treatment costs, may be computed on the basis of increased costs to resource users.

i. Evaluation Procedure: Problems in Application.

(1) Application of the procedures in this section requires care to ensure that all costs are included. The identification and determination of all associated costs and external diseconomies require full perception of the measures required to achieve the benefits being claimed and the impacts produced by the actions taken. It must be emphasized that it is not practical or economic to trace out all other direct effects.

(2) Application of the procedures in this section requires care to avoid double counting. A full understanding of the values reflected by market and surrogate values is necessary to prevent double counting. For example, the market value of land that includes a private recreation development reflects the recreation value. In this case, double counting would result if a surrogate recreation value (loss) were added as a cost. On the other hand, the market value of land that provides free public recreation does not reflect the recreation value, so the surrogate recreation value (loss) must be added as a cost.

(3) Market prices are relatively easy to obtain. However, some prices are subject to large fluctuations in short periods of time, so care must be taken to determine reasonable current costs of such items for project evaluation purposes.

k. Evaluation Procedure: Data Sources. Market price information is available from data on comparable sales, Government publications (e.g., bulletins of the U.S. Departments of Commerce, Agriculture, and Labor), and business reports. Data sources for those NED benefit evaluation procedures having application to cost analysis are covered in their respective sections of Appendix E.

l. Report and Display Procedures. Display NED costs identified through the procedures described above as line item entries in the adverse effects section of the NED account. The following display in Tables D-1 and D-2 are suggested:

Table D-1: Project Investment Comparisons

	Alternative 1			Alternative 2			Alternative X		
	Unit		Amt.	Unit		Amt.	Unit		Amt.
	Quantity	Price		Quantity	Price		Quantity	Price	
1. Construction Costs	.....	.....	.....	.....	.....	.....	.....	.....	.....
2. Construction contingency costs	.....	.....	.....	.....	.....	.....	.....	.....	.....
3. Preconstruction, engineering and design costs	.....	.....	.....	.....	.....	.....	.....	.....	.....

4. Administrative service costs	.....	.....	.....	.....	.....	.....	.....	.....	.....
5. Fish and wildlife habitat mitigation costs	.....	.....	.....	.....	.....	.....	.....	.....	.....
6. Historical and archeological salvage operation costs	.....	.....	.....	.....	.....	.....	.....	.....	.....
7. Land, water, and mineral rights costs	.....	.....	.....	.....	.....	.....	.....	.....	.....
8. Relocation costs	.....	.....	.....	.....	.....	.....	.....	.....	.....
9. P.L. 91-646 costs	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total investments	.....	.....	.....	.....	.....	.....	.....	.....	.....
Price Level: ....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Installation period: ....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Period of analysis:	.....	.....	.....	.....	.....	.....	.....	.....	.....

Table D-2: Annualized Adverse Effects

	Alternatives		
	1	2	X
Interest on Investment			
Amortization on Investment			
Annual OMRR & R			
Associated Costs <sup>a</sup>			
Other Direct Costs <sup>a</sup>			
Total Annualized Costs.....			
Other adverse effects not evaluated in monetary terms <sup>a</sup>			

<sup>a</sup> Identified by type

**D-4. Planning Special Topics and Cautions.** This section comprises certain topics elaborating, amplifying, and extending ideas contained in, or implied by, the planning and evaluation procedures presented in the main body of this regulation and Appendix E. In a few cases the guidance is mainly for or only for particular project purpose(s) or type(s) of authorization.

a. Non-Standard Procedures. Procedures to calculate the benefit-cost ratio of a project not approved by the Water Resources Council are considered non-standard procedures.

(1) Specific approved procedures are described in Appendix E, this Appendix, and in the Principles and Guidelines (P&G).

(2) An alternative procedure which is not specifically contained in the NED Procedures may be employed if the following requirements are met and the procedure is fully documented:

(a) The procedure is in accordance with current policy and estimates of the magnitudes of project effects, that is quantities, are empirically estimated.

(b) The procedure would give a more accurate benefit estimate; or, it can be demonstrated that the procedure reduces study time and cost and does not alter the formulation of the project.

(c) Prior approval for each application of such alternative procedures is obtained from HQUSACE (CECW-P). Approval is less likely for procedures proposing use of the cost of an alternative or administratively established values as an estimate of benefits.

b. Current Estimates of Project Benefits.

It is Corps policy to report and maintain current estimates of project benefits, costs, and economic justification throughout the entire project development process. During the feasibility stage, project benefits should be computed in accordance with the procedures outlined in Appendix E and are not to be inflated or updated using simple indices. Following the completion of the Report of the Chief of Engineers, all active funded projects and separable elements also need to contain current estimates of benefits, costs and economic justification. The purpose of the policy is to provide reasonable assurance of economic justification to non-Federal sponsors, Congress and Federal decision makers throughout the project development process. An analysis is considered current if it was approved within 3 fiscal years of the pertinent decision date. As an example, in June 2015 budget submissions, the approval date of the document containing the most recent economic analysis could be no earlier than October 2011, since FY 2012 is three fiscal years prior to FY 2015 and October 2011 is the first month of FY 2012. If more than three fiscal years have elapsed since the release of the Report of the Chief of Engineers, an economic reevaluation must be the first item of work upon receipt of any funds intended to further project implementation.

(1) Dates and general guidance for decision requests. The pertinent dates for budgetary and investment decisions, along with guidance for various decision requests are specified below.

(a) New Start PED Funding Requests. For all New Start PED funding (i.e., at the beginning of new construction) the project still needs to be proven to be economically justified. The pertinent decision date is the submission of the budget request to HQUSACE. Benefit-to-cost ratios (BCR), which are required in support of budget requests, will be developed based on the latest approved economic analysis, annualized at the specified discount rates. The current project costs should be deflated to the same price level as in the latest approved economic analysis, annualized at the current interest rate. The report and approval date of that analysis must be cited and should not be more than three fiscal years old. If more than three fiscal years have elapsed since the release of the Report of the Chief of Engineers, an economic reevaluation must be the first item of work upon receipt of PED funds. Follow-on funding will be contingent upon approval of the economic reevaluation. If the reevaluation shows that the project is no longer economically justified, the project should not move forward and becomes inactive. Appendix G elaborates on the classification requirements for studies and projects.

(b) Continuing PED. For all continuing PED funding requests the pertinent decision date is the Division submittal of the budget request to HQUSACE. The same methodology, deflating costs to the date of the approved economic analysis and adjusting costs and benefits for the budget year discount rate applying to New Start PED budget requests, should be used for continuing PED funding requests. The three-year requirement for updates is also applicable. Expended PED costs are not included in this analysis.

(c) New Construction Starts. For all New Start Construction funding requests for projects and separable elements of projects, the pertinent decision date is the submission of the Division budget request to HQUSACE. The same BCR computation and reporting requirements and the three year updating requirements previously discussed are applicable to New Construction Start Budgeting. If the reevaluation uncovers major changes that could affect project formulation or sizing, additional PED funds rather than construction funds should be requested to undertake a complete General Reevaluation (GRR) level evaluation. Expended PED costs are not included in this analysis.

(d) Project Partnership Agreements (PPAs). For all PPA's, the pertinent decision date is the submission of the final PPA to ASA (CW) for approval. If more than three fiscal years have elapsed since the approval date of the latest economic analysis, a reevaluation must be performed in sufficient detail with supporting documentation to show the project remains justified. The reevaluation may be presented in a Limited Reevaluation Report (LRR) which supplements the project document cited in the PPA. Submission of the LRR to HQUSACE for approval must be accomplished prior to submission of the draft PPA.

(e) Non-PPA Projects. The pertinent decision date for approval to initiate expenditures of Construction General appropriations for projects which do not require a PPA, such as inland navigation, is the submission date of the request to HQUSACE. The three fiscal year and reevaluation requirements for PPA's are also applicable to non-PPA projects.

(2) Definition of Last Approved Official Document. The approved official document for the Feasibility Report is the Report of the Chief of Engineers. Other approved official documents may include General (GRR) or Limited Reevaluation Reports (LRR). If other documents are to be used as the basis for obtaining budgetary or implementation approval, they must be approved by CECW.

(3) Plan for Economic Updates. Feasibility reports, General Reevaluation reports and other project decision (formulation) documents, shall include a plan for updating project benefits for future reporting and decision making. The economic update plan shall likewise be included in all Project Management Plans. The actions in the plan may be limited in that no major new analyses need be conducted but rather previous assumptions reviewed and updated with techniques such as surveys and sampling employed to develop a reasonable estimate of current project benefits provided no significant changes in without and/or with project conditions have occurred. However, in no event will simple indexing of overall benefits be acceptable. The plan shall include discussions of the data that will be required and the procedures that will be

employed. Any rational set of procedures that result in a current analysis of benefits may be acceptable except procedures which amount solely to indexing of benefits. Examples of procedures that could be formulated during feasibility and other studies, and which could be useful in providing current analysis in the future are sampling and monitoring, partial benefit reanalysis, and limited indexing.

(a) Sampling or Monitoring. The focus of the effort should be on factors which are critical to project formulation and feasibility and are representative of the major benefit categories (i.e., inundation reduction benefits in a flood risk management project or transportation cost savings in a navigation project). For example, in a fully developed floodplain a sample of structures may be selected for development of replacement cost less depreciation of structure values using construction cost models. The values derived could then be used to represent values for the floodplain. For a navigation project, if feasibility depends critically on ships of given characteristics, a plan may be developed to monitor future use of these ships.

(b) Partial Benefit Reanalysis. This study will not have nearly the depth or breadth of a feasibility study. It could be informative regarding current benefits and may be accomplished at reasonable cost. For example, damage calculations at current prices for sampled structures provide valuable information on the current level of inundation reduction benefits.

(c) Limited Indexing. Use of generalized indices such as CWCCIS may be used for specific infrastructure benefit categories such as roads, bridges, and rail lines provided these benefit categories do not constitute a major portion of overall project benefits. Additionally, the reevaluation report must document that the infrastructure improvements are still present and used and are subject to comparable flood damages as in the latest report.

(4) Content of Limited Economic Reevaluation. Limited Reevaluation Reports (LRR) may be used to document the current economic evaluation of a project (or separable elements), or to report some other kinds of project changes.

(a) Scope and Documentation. The limited economic evaluation information submitted to HQUSACE for approval in a reevaluation document needs to be either complete within the document or accompanied by the document it is updating. Limited economic reevaluations must include sufficient data to describe what was done in the previously approved document, what was done in the limited reevaluation, what differences there are and the reasons for the differences. Documentation should cover items which are not strictly socio-economic conditions such as changes in hydrology and hydraulic characteristics or periods of record and costs. This documentation should cover each benefit and cost item, and show net benefits and the benefit-cost ratio at the current discount rate.

(b) Format and Displays. A good format would start with brief summary description of the previous approved evaluation and the current reevaluation, accompanied by a tabular display of the changes, followed by support documentation explaining the changes. The following simple display format is a suggested guideline for the tabulation of current costs and benefits and economic justification in a structural flood control project.

Table D- 3: Tabulation of Current Costs and Benefits

	Latest Approved <sup>1</sup>	Current Estimate	Difference	Reason for Difference
Benefit Category <sup>2</sup>				
Inundation				
Residential Structures				
Residential Contents				
Other				
Cost Category				
Construction				
Lands				
Other				
Net Benefits				
Benefit/Cost Ratio				

<sup>1</sup> Cite document, name, date, approval date, price level and interest rate.

<sup>2</sup> Use categories and sub-categories of benefits in latest approved document.

(5) Project Changes Requiring More Detailed Analysis. In some instances, a more thorough reanalysis than specified in the economic update plan needs to be provided. Examples may include instances where the previously approved project document predates cost-shared feasibility study planning; an economic benefits update plan has not been approved; the project has not had seamless funding; substantial changes in the without condition, project formulation, project design and/or project costs have occurred. The level of effort for the economic reevaluation should be based on whether the changed conditions warrant a reformulation of a project or a reaffirmation of the justification of the authorized plan. If reformulation, including evaluation of alternative sizes of a project, is warranted a GRR should be prepared and the economic reanalysis should be of similar scope as required for a feasibility study. If reformulation is not warranted a limited economic reevaluation shall be documented in an LRR.

(6) Summary. The policy of reporting and maintaining current estimates of project benefits and economic justification can most effectively be accomplished through quality cost estimates in feasibility reports, seamless funding, and development of economic update plans. Through such quality development in the early stages of planning and engineering, the necessity for laborious reevaluation and review can be diminished. Occasionally, more full reanalysis and review are warranted when conditions change and older projects are reintroduced into the system; the LRR and GRR are the appropriate vehicles for these reanalyses.

c. Benefits that Accrue During Project Construction.

(1) Benefits accruing during project construction should be documented and included in the benefit evaluation. These benefits should be brought forward from the time the benefits start to the beginning of the period of analysis, using the project discount rate. Benefits (and costs) first are stated in present worth terms as of the beginning of the period of analysis, and then are annualized.

(2) Benefits and costs during the construction period are calculated separately; it is not assumed that benefits accrued are offset by interest incurred, or vice versa.

d. Most Likely Non-Federal Alternative. The cost of the most likely alternative may be used to estimate NED benefits for a particular output if non-Federal entities are likely to provide a similar output in the absence of any of the alternative plans under consideration and if NED benefits cannot be estimated from market price or change in net income. This assumes that society would in fact undertake the alternative means. Estimates of benefits should be based on the cost of the most likely alternative only if there is evidence that the alternative would be implemented. The most likely alternative should in general be something other than a single-purpose project constructed at the same site by the non-Federal entity. In determining the most likely alternative, the planner should give adequate consideration to nonstructural measures as well as structural measures.

e. OMB-approved Survey Questionnaire. This paragraph provides guidance on the use of OMB-approved survey questionnaires for collection of planning data.

(1) The requirement for OMB approval of survey questionnaires is noted in Appendices B and E.

(2) OMB has approved a group of questionnaire items for the collection of planning data. The questionnaire items cover the range of data that would generally be collected by survey in water resources studies.

(3) The approved questionnaire items are transmitted by memorandum every three years, as additions and revisions are made and OMB approval is renewed.

(4) The MSC Commander or designee must thoroughly review the individual questionnaire for quality control purposes (including an assessment of why data are not available from existing sources) before it is used by the district. Currently, OMB requires that Corps questionnaires be submitted for their review and approval before implementation. The quality control review information below must be provided to OMB when seeking survey approval.

(5) Quality control review should be based upon the need for the questionnaire and the reasonableness and adequacy of:

- (a) The research questions to be answered.
- (b) The sampling strategy being employed.
- (c) Data collection procedures being employed, and follow up procedures.
- (d) Data analysis plan.
- (e) The consistency with OMB-approved questionnaires.

(6) Additional guidance for the conduct of questionnaire surveys is contained in ER 1165-2-503.

f. Opportunity Cost of Time. This paragraph provides guidance for evaluating the opportunity cost of time, when time is saved or lost as a result of implementation of a project. The value of time saved is frequently used for evaluating the benefits of projects that reduce the travel time between origins and destinations. It is commonly applicable to flood risk management projects in which motorists encounter delays associated with flooding. It can also be applied to projects having outdoor recreation as an output, where the travel cost method of benefit evaluation is used. Projects requiring bridge modifications may create traffic delays during construction. This results in an addition to travel time and in an additional NED cost of the project.

(1) Determine the amount of time savings or loss that results from implementation of a project for each economic activity.

(a) The amount of and circumstances resulting in the time savings or loss should be clearly expressed in the with and without project planning context.

(b) Savings and losses should be estimated by individual or unit economic activity. The number of individuals or economic activities should also be specified.

(2) Determine the alternative use of the time savings or losses. The alternate use will be valued as either work, social/recreation or other.

(3) The following table will be used for the determination of value of time saved in Corps planning studies. Thus, the value of time saved will be different depending on the purpose of the trip and the amount of time saved on each trip. The percentages shown in column (3) can be applied after the before-tax family income of drivers in the study area is estimated. The dollar values shown in column (2) are based on \$49,445 the median family income for the U.S. in 2010 (U.S. Bureau of the Census) though this could be adjusted to the specific study area. The value of time savings for work trips is on a per vehicle-occupant basis. Therefore, to calculate the total value of work time saved per vehicle requires multiplication by the adults per vehicle. For social/recreation, vacation, and other trips, the value of time saved is on a per vehicle basis. The value of time saved for these trip purposes should not be adjusted for the number of passengers.

Table D- 4: Value of Time Saved by Trip Length and Purpose

	VALUE OF TIME SAVED ADJUSTED TO HOURLY BASIS (\$/HR) assuming 2080 hours per annum	VALUE OF TIME SAVED ADJUSTED TO HOURLY BASIS (% OF HOURLY FAMILY INCOME OF DRIVER)
LOW TIME SAVINGS (0-5 MINUTES)		

WORK TRIPS	\$1.52	6.4%
SOCIAL/RECREATION TRIPS	\$0.31	1.3%
OTHER TRIPS	\$0.02	0.1%
<b>MEDIUM TIME SAVINGS (6-15 MINUTES)</b>		
WORK TRIPS	\$7.65	32.2%
SOCIAL/RECREATION TRIPS	\$5.49	23.1%
OTHER TRIPS	\$3.45	14.5%
<b>HIGH TIME SAVINGS (OVER 15 MINUTES)</b>		
WORK TRIPS	\$12.79	53.8%
SOCIAL/RECREATION TRIPS	\$14.26	60.0%
OTHER TRIPS	\$15.33	64.5%
<b>VACATION</b>		
ALL TIME SAVINGS	\$17.85	75.1%

Note: Work trip is on per person basis while all other trip purposes are on a per vehicle basis.

g. Publication of Planning Data, Information and Guidance. Various data used in planning are circulated by Economic Guidance Memorandum. These data include:

- (1) Federal water resources discount rate;
- (2) Normalized agricultural prices;
- (3) Unit day values for recreation;
- (4) Areas eligible for NED benefits from employment of previously unemployed labor resources;
- (5) National Flood Insurance Program operating costs;
- (6) List of contacts for Corps of Engineers when seeking National Marine Fisheries Service (NMFS) input on measuring commercial fishing benefits; and
- (7) Vessel operating cost estimates.
- (8) Ability-to-pay factors for qualifying counties and counties eligible for price reductions on water storage contracts.

**D-5. Financial Capability of Non-Federal Sponsor.**

Provisions in the Water Resources Development Act of 1986 directed the Corps to assess the non-Federal sponsor's ability to finance projects, which entailed a detailed financing plan from the non-Federal sponsor as well as a District's assessment of the sponsor's ability to pay. Since then, concerns about sponsors lacking the financial capabilities to meet their cost sharing obligations have been largely unfounded. The non-Federal sponsor's financing plan and District's assessment of the sponsor's ability to pay are no longer required. Instead, the non-Federal sponsor is required to self certify its financial capability to meet its cost sharing obligations; first, for the feasibility report and then, for the Project Partnership Agreement. The Chief Financial Officer, or equivalent, should be the person who will certify that the non-Federal sponsor is financially capable of fulfilling its cost sharing obligations.

#### **D-6 Interest Rate and Period of Analysis.**

a. Conceptual Basis. Project NED benefits and costs shall be compared at a common point in time. The following information shall be presented in decision documents:

(1) Installation Period. The installation period refers to the number of years required for installation of the plan. If staged installation is proposed over an extended period of time, the installation period is the time needed to install the first phase.

(2) Installation Expenditures. This refers to the dollar expenses expected to be incurred during each year of the installation period.

(3) Period of Analysis. The period of analysis refers to the time horizon for project benefits, deferred installation costs, and operation, maintenance, repair, rehabilitation, and replacement (OMRR&R) costs. Use the same period of analysis for all alternative plans. Appropriate consideration should be given to environmental factors that may extend beyond the period of analysis. The period of analysis relates to the investment decision and should not be confused with the term "life of the project".

(a) The period of analysis for comparing costs and benefits following project implementation is further defined and limited to the lesser of:

(1) The period of time over which any alternative plan would have significant beneficial or adverse effects;

(2) A period not to exceed 50-years except for major multiple purpose reservoir projects;

or

(3) A period not to exceed 100-years for multiple purpose reservoir projects.

(b) In cases where alternatives have different implementation periods, a common base year will be established and costs and benefits will be compounded or discounted to that base year. Projects that accrue benefits during the implementation period should refer elsewhere in this document (paragraph D-4c) for specific guidance.

(4) Benefit Stream. This refers to the pattern of expected benefits spread over the period of analysis.

(5) OMRR&R Costs. The expected costs over the period of analysis for operation, maintenance, repair, rehabilitation, and replacement necessary to maintain the benefit stream and agreed-upon levels of mitigation of losses to fish and wildlife habitats.

(6) Discount Rate. The discount rate is the interest rate that must be used when converting benefits and costs to a common time basis, and is set each fiscal year in accordance with Section 80 of Public Law 93-251. HQUSACE obtains the rate from U.S. Department of the Treasury, which computes it as the average market yield on interest-bearing marketable securities of the United States that have 15 or more years remaining to maturity. The computed rate is effective as of 1 October of each year and is published by CECW-P as an Economic Guidance Memorandum.

d. Calculating Net NED Benefits in Average Annual Equivalent Terms. Net NED benefits of the plan are calculated in average annual equivalent terms. To perform this calculation, discount the benefit stream, deferred installation costs, and OMRR&R costs to the beginning of the period of analysis using the applicable project discount rate. Installation expenditures are brought forward to the end of the period of installation by charging compound interest at the project discount rate from the date the costs are incurred. Use the project discount rate to convert the present worth values to average annual equivalent terms.

e. Interest Rates for Changes. Interest rates used in evaluating project changes through incremental analysis are as follows:

(1) General Reevaluation Studies. For general reevaluation studies, use the current interest rate.

(2) Validation Reports. For Validation Reports, use the current interest rate.

(3) Addition of Mitigation. For the addition of mitigation, use of the rate applicable to the authorized project is permissible.

#### **D-7. NED Benefit Evaluation Procedures: Unemployed or Underemployed Labor Resources.**

a. Purpose. the economic effects of the direct use of otherwise unemployed or underemployed labor resources during project construction or installation may, under certain conditions, be included as a national economic development (NED) benefit. Because of the dynamic nature of unemployment situations, the appropriateness of these benefits will be determined in consideration of economic conditions existing at the time the project is submitted

for authorization and for appropriations to begin construction. This section provides procedural guidance.

b. Conceptual Basis.

(1) The social cost of a project is less than the market contract cost in situations in which otherwise unemployed or underemployed labor resources are used in project construction. The opportunity cost of employing otherwise unemployed workers in project construction or installation is equal to the value of leisure time foregone by such workers. Because society does not give up any alternative production of goods and services and because it would be difficult to measure the value of leisure time foregone, a zero opportunity cost is used in these procedures.

The opportunity cost of employing otherwise underemployed workers equals their without project earnings, which, by virtue of their underemployment, are less than their market cost. The most straightforward way to reflect the effects of employing unemployed or underemployed labor resources would be to reduce by the appropriate amount the project construction costs in the NED account, but this method would cause accounting difficulties in appropriations, cost allocation, and cost sharing. Therefore, these effects are treated as a project benefit in the NED account.

(2) Conceptually, any employment, anywhere in the Nation, of otherwise unemployed or underemployed resources that results from a project represents a valid NED benefit. However, primarily because of identification and measurement problems and because unemployment is regarded as a temporary phenomenon, only those labor resources employed onsite in the construction or installation of a project or a nonstructural measure should be counted. Benefits from use of otherwise unemployed or underemployed labor resources may be recognized as a project benefit if the area has substantial and persistent unemployment at the time the plan is submitted for authorization and for appropriations to begin construction. Substantial and persistent unemployment exists in an area when:

(a) The current rate of unemployment, as determined by appropriate annual statistics for the most recent 12 consecutive months, is 6 percent or more and has averaged at least 6 percent for the qualifying time periods specified in subparagraph (b) below and:

(b) The annual average rate of unemployment has been at least: (a) 50 percent above the national average for three of the preceding four calendar years, or (b) 75 percent above the national average for two of the preceding three calendar years, or (c) 100 percent above the national average for one of the preceding two calendar years.

(3) Only the portion of project construction activity located in such an area is eligible for employment benefits as calculated in accord with the procedures specified below. Any benefit claimed should be clearly justifiable both in terms of availability of amounts of unemployed and/or underemployed labor and their skills and occupations.

c. Planning Setting.

(1) Without Project Condition. The without project condition is the most likely condition expected to exist in the future in the absence of a project, including known changes in law or public policy. The evaluation of NED benefits associated with the use of otherwise unemployed and underemployed labor resources is linked to the number by which these resources would be reduced over time without a project.

(2) With Project Condition. The with project condition is the most likely condition expected to exist in the future with a given project alternative. There is a different with project condition and thus a different employment benefit for each alternative plan. Currently, the employment benefit cannot be estimated directly on the basis of a comparison of the size of the pools of unemployed and underemployed labor with and without a project. Instead, the benefit procedure implicitly projects the percentage of project labor hires estimated to come from the unemployed labor pool.

d. Evaluation Procedure.

(1) Step 1. Calculation of employment benefits is limited to onsite project construction or installation activity in eligible regions as defined in paragraph D-7b(2). The first step therefore is to determine whether a project is wholly or partially located in an eligible area.

(2) Step 2. Estimate the number of skilled and unskilled unemployed construction workers in the labor area. Construction labor pool data are usually available from local offices of State employment security agencies.

(3) Step 3. Determine the labor requirements for plan implementation as follows:

(a) Labor cost. The manpower requirements of water resource projects differ widely. Construction cost estimate data will provide the percentage of labor cost to total construction contract cost.

(b) Manpower requirements. Analyze the plan's construction work force and schedule to determine manpower requirements over the construction period for skilled and unskilled categories of workers. Convert these data to total construction wages in skilled and unskilled categories by year of construction. In addition, estimate the yearly wage bill of other workers needed on the project. Use the occupational tables in Table D-7 in this section to categorize different types of workers.

(4) Step 4. Compare the annual manpower requirements of the project to the size of the unemployed labor pool in eligible regions. If labor availability is significantly larger than labor requirements, proceed to the next step. If not, reduce the percentages in the next step based on one or both of the following: expert interviews; or a careful match-up of requirements and availability for specific types of jobs (e.g., carpenters).

(5) Step 5. Calculate NED employment benefits.

(a) Standard method. The following percentages are derived from An Evaluation of the Public Works Impact Program (PWIP)<sup>1</sup>. Although the projects studied in the PWIP report are not fully comparable to many typical water projects, the report does provide an empirical basis for relating public works expenditures to employment of unemployed workers. Case 1, below, covers situations in which there is no “local hire” rule; it is taken directly from the PWIP report, as PWIP has no local hire rule. Case 2 covers situations in which there is a local hire rule; the reference data are modified to account for an 80-percent local hire by scaling up the actual local hires (for skilled and unskilled workers) to 80 percent, but retaining the distribution of local hires previously employed to local hires previously unemployed.

(1) Case 1, NED benefits, no local hire rule. Multiply the total wages determined by categories of workers (skilled, unskilled, and other) by the following percentages to obtain NED benefits by year of construction:

Skilled--30  
Unskilled--47  
Other--35

(b) Case 2, NED benefits, local hire rule. Apply the following percentages in Case 2 situations:

Skilled--43  
Unskilled--58  
Other--35

Because the 80-percent local hire rule is a goal, not a requirement, support these percentages by data that indicate the local hire goal is likely to be met. If this is unlikely, reduce Case 2 percentages to numbers between the standard Case 1 and Case 2 percentages.

(2) Annual NED benefits. Convert the NED benefits by year of construction to an annual equivalent basis using the current discount rate.

(b) Alternative methods. The percentages of unemployment hires may be changed from those used in the standard method if the change can be supported by an empirical study that shows different percentages of unemployed and underemployed workers on a similar project, or on a segment of the same project, for labor market conditions similar to those of the proposed project. In using this method, it may be necessary to vary the categorization of construction workers used in the standard method. The opinions of experts such as local State employment security agencies, local construction firms, associations of contractors, and labor unions may not

be substituted for empirical data. Studies used to document alternative percentages for specific types or locations of projects should be cited if not included in the project report.

(c) The percentages are used in the standard method to measure wages paid directly to previously unemployed workers. Previously employed workers may vacate jobs that then become available to unemployed workers, but there are no empirical data to support a quantification of such indirect effects, and no estimates of these effects should be included in the NED account.

e. Report and Display Procedures. Include the employment benefits of each alternative plan as a line item in the display of NED benefits in the system of accounts for any project or portion of a project located in an area that contains unemployed or underemployed resources.

f. Problems in Application.

(1) An IWR publication provides guidance for estimating benefits associated with the direct use of otherwise unemployed labor resources during project construction. The Report of Survey of Corps of Engineers Construction Workforce (IWR Research report 81-R05) provides an empirical basis for changing the percentages of unemployed specified in this section. The IWR report introduces a new evaluation technique and new techniques must be approved by the Water Resources Council. Therefore, if the approach in the IWR report is used, the techniques specified in this section should also be used to demonstrate the sensitivity of the results to the different methods.

(2) Unemployment benefits shall not be used in project formulation, scaling, or NED plan determination. These benefits shall not be used to justify a project where the BCR is otherwise less than unity.

Table D- 7: Occupational Tables  
(For Use in Evaluation of Unemployed or Underemployed Labor)

<b>Blue Collar Unskilled Occupations</b>	
Bricklayer Apprentice	Plasterer Tender
Carpenter Apprentice	Powerman
Apprentice Carpenter	Pusher
Carpenter Helper	Rakeman
Chairman	Reboundman
Deck Hand	Road Laborer
Electrician Apprentice	Roof Helper
Apprentice Electrician	Sand Blaster
Apprentice Wireman	Set-up-man
Electrician Trainer	Sprinkler Apprentice
Iron Worker Apprenice	Stake Setter
Laborer	Tender
Asphalt Distributor	Termite Operator

Assistant Carpenter	Tile Setter Operator
Bottom Laborer	Vibrator Operator
Brick Tender	Water Truckman
Carpenter Aid	Lumberman and Nurseryman
Carpenter Helper	Tree Thinner
Chainsawman	Treeman
Common Laborer	Treeplanter
Ditch Laborer	Operating Engineer Apprentice
Drill Helper	B.M. Apprentice
Flag Person	EO Group III
Hod Carrier	EO Group 222
Kettleman	Plumber Apprentice
Laborer	Plumber Apprentice
Laborer Apprentice 3 <sup>rd</sup>	Plumber Helper
Laborer Group I	Painter's Helper
Laborer Group V	Sheet Metal Apprentice
Labor Shop Man	Vibrator Operator
Laborer Topman	Watchman
Laborer Utilityman	Night Watchman
Landscape Laborer	
Mason Helper	
Mason Laborer	
Mortarmier	
Pipe Layer	
Pipe Fitter	

**Blue Collar Skilled Occupations**

Blaster	Construction Foreman
Boilermaker	Foreman
Boilermaker Foreman	Job Foreman
Bricklayer Foreman	Lead Foreman
Block Layer	Lather
Truckpointer	Lather Foreman
Brick Mechanic	Master Mechanic
Carpenter	Mechanic
Form Setter	Mechanic Welder
Journeyman Carpenter	Repairman
Soft Floor Layer	Mechanic (Continued)
Carpenter Foreman	Repairman Leadman
Carpenter Superintendent	Oiler
Cement Mason	Oiler Equipment Operator
Finisher	Oiler Operator Group II

Journeyman Finisher	Oiler Track Type
Cement Mason Foreman	Operating Engineer
Diver	Asphalt Distributor Operator
Driller	Asphalt Heaterman
Drill Rig Operator	Backhoe Operator
Electrician	Blade Operator
Journeyman Electrician	Case Operator
Mechanical Electrician	Class A Operator
Wireman	Class C Operator
Journeyman Wireman	Crane Operator
Electrical Foreman	Digger Operator
General Foreman	Distributing Operator
General Labor Foreman	Equipment Operator
Project Foreman	Equipment Operator Group III
Glazier	Front End Lift Fork Operator
Iron Worker	Heavy Equipment Operator
Reinforcing Ironworker	Hi-Lift Operator
Structural Ironworker	Lift Fork Operator
Steel Worker	Loader Operator
Steel Erector	Maintenance Loadman
Steel Setter	Motor Grader Operator
Reinforcing Steel Worker	Operator Group III
Iron Worker Foreman	Pan Operator
Labor Foreman	Park Equipment Operator
	Power Drive Moisture Operator
	Operating Engineer Foreman
	Leader Operator
	Painter
	Brush Painter
	Roller Painter
	Spray Painter
	Painter Foreman
	Pipe Driver
	Pipe Fitter
	Sp. Box Man
	Pipe Fitter Foreman
	Sprinkler Foreman
	Plasterer
	Plasterer Foreman
	Plumber
	Pipe Layer
	Plumber Foreman
	Plumber General Foreman
	Plumber Superintendent

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Rigger Foreman
Roofer Sheet Metal Worker
Journeyman Sheet Metal
Sheet Metal Mechanic
Sheet Metal Operator

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## **D-8. Social Effects.**

a. Other Social Effects (OSE) Account. Most water and land resource plans have beneficial and adverse effects on social well-being. These effects reflect a complex set of relationships and interactions between inputs and outputs of a plan and the social and cultural setting in which these are received and acted upon. These effects will be reported in the system of accounts for each alternative plan with emphasis on effects of relevance to decision makers. Special attention will also be given to efforts which contribute to watershed and systems analysis and collaboration. The OSE account is a means of displaying and integrating water resource planning information on alternative plan effects from perspectives that are not reflected in the other three accounts OSE evaluates directly items of concern to the quality of individual's lives and their communities. The categories of effects in the OSE account include the following: Urban and community impacts; life, health, and safety factors; displacement; long-term productivity; and energy requirements and energy conservation. (See the OSE Handbook for further details).

b. Environmental Justice. An Environmental Justice (EJ) analysis is a statutory requirement of EO 12898. The EJ evaluation is a specialized piece of the OSE considerations. The two efforts should be closely coordinated.

c. Social Vulnerability. Socially vulnerable populations have characteristics which cause them to potentially be impacted more dramatically and negatively than other populations. The presence and characteristics of socially vulnerable populations in the study area should be evaluated early in the planning process. (see Socially Vulnerable Population Primer and the Social Vulnerability Handbook for more information)

d. Beneficial Effects . Beneficial effects on social wellbeing are contributions to the equitable distribution of real income and employment; life safety and health and to other social aspects of life. Since they are integrally related to the basic values and goals of society, these effects are usually not subject to monetary evaluation. The normal market exchange process, however, produces monetary values which can be utilized to aid in measuring the distributional impacts of plans on real incomes.

e. Adverse Effects. Adverse effects of a plan have detrimental impacts on the equitable distribution of real income and employment, life, health and safety or otherwise diminish or detract from the attainment of other social opportunities. Such adverse effects include not only those incurred in the designated planning area, but also include adverse consequences elsewhere in the Nation resulting from implementation of the plan.

(1) Measurement standards:

(a) Effects on income, employment, and population distribution, fiscal condition, energy requirements, and energy conservation may be reported on a positive or negative basis. Effects on life, health, and safety may be reported as either beneficial or adverse. Other effects may be reported on either a positive/negative basis or a beneficial/adverse basis. An expanded qualitative discussion is recommended for effects which may be of particular interest to the public, other agencies and decision makers. An expanded is a minimum requirement for matters which impact life safety.

(b) Effects that cannot be satisfactorily quantified or described with available methods, data, and information or that will not have a material bearing on the decision making process may be excluded from the OSE account.

(2) With and without analysis. Existing conditions encompassed by the relevant social factors will be described and presented in terms that best characterize the planning perceptions and social setting of the affected area in the situation without the plan. Planners will also prepare similar descriptions for future social conditions to be expected with and without the plan throughout the period of analysis. The situation existing before the initiation of planning will provide the data from which to evaluate significant social effects under alternative plans. A straightforward method for evaluation and display of social effects can be found at <http://www.iwr.usace.army.mil/Portals/70/docs/iwrreports/2013-R-03.pdf>

(3) Approach . There are many sources of data for evaluating social effects (see OSE Handbook) Emphasis should be given to well documented data which is generally accepted such as census information. Planning studies should explicitly explore innovative approaches to the identification and measurement of the social well-being effects. Such procedures should be carefully documented in the report.

d. Community Impacts. Types and locations of significant impacts, broken down by salient population groups and geographic areas, may be reported in the Other Social Effects Account. The principle types of urban and community impacts are as follows:

(1) Effects on real incomes. Beneficial effects on real income occur when designated persons or groups receive income generated as a result of the plan. Current guidelines defining the family poverty line may be used as the data from which to measure and portray the estimated absolute and percentage increase toward meeting or exceeding this standard for specific geographic planning areas.

(2) Effects on employment distribution, especially the share to minorities;

(3) Effects on population distribution and composition;

(4) Effects on the fiscal condition of the State and local sponsor;

(e) Effects on educational, cultural, and recreational opportunities. Beneficial effects to this component include contributions to (1) improved opportunities for community services such as utilities, transportation, schools, and hospitals, (2) more cultural and recreational opportunities such as historic and scientific sites, lakes, and reservoirs, and recreations areas. Beneficial effects to improved community services may be described in appropriate quantitative terms, while increased cultural and recreational opportunities will be set forth as the numerical increase in the relevant facilities, otherwise accounting for size, use potential, and quality. Beneficial effects to improved community services may be described in appropriate quantitative terms, while increased cultural and recreational opportunities will be set forth as the numerical increase in the relevant facilities, otherwise accounting for size, use potential, and quality. Conversely, adverse effects are identified and measured or described as detrimental effects on education, cultural, and recreational opportunities

(f) Effects on security of life, health, and safety. Beneficial effects include contributions to

(1) reducing risk of flood, drought, or other disaster affecting the security of life, health, and safety;

(2) reducing the number of disease-carrying insects and related pathological factors;

(3) reducing the concentration and exposure to water and air pollution; and

(4) providing a year-round consumer choice of food that contributes to the improvement of national nutrition. In projecting likely future hazards, an estimate of the number of persons affected or at risk for loss of life may be

provided. However, a qualitative interpretation and evaluation of the improvement and expected results may be given if reasonably reliable figures are not available .

(g) Displacement effects include the displacement of people, businesses, and farms.

Displacement has a distribution effect on net income but it is not a change in net income for a region. Being a distribution effect does qualify it as an OSE if it is a change to distribution of income in the region. However, when an expense is incurred due to displacement such as a made by a homeowner that has been displaced to rent a temporary residence, they do receive a value in return for that expense in the form of the residence. In terms of net income, the expense to rent would occur in the future without project, but in the with-project condition, you would have to count the loss of rental income by the owner of the temporary residence. It would be a zero sum and not an impact to national economic development.

(h) Long-term productivity effects include maintenance and enhancement of the productivity of resources, such as agricultural land, for use by future generations.

(i) Effects on emergency preparedness. Beneficial effects include contributions to (1) extending, maintaining, and protecting major components of the national water transportation system; (2) provision of flexible reserves of water supplies; (3) provision of critical power supplies (ample, stable, quickly responsive); (4) provision of reserve food production potential; (5) provision for the conservation of scarce fuels; (6) provision for dispersal of population and industry; and (7) supplying international treaty requirements. These beneficial effects will be measured in appropriate quantitative units where readily practicable, they may be characterized in qualitative terms if more practical. Conversely, adverse effects are identified and measured or described as overloading capacities of water resource systems and increasing the risk of interruption in the flow of essential goods and services needed for requirements of national security.

(j) Other. Other effects on social well-being may be identified and displayed as relevant to alternative plans. Particular attention should be given to impacts on socially vulnerable populations of all actions.

This amendment was approved by Theodore A. "Tab" Brown, P.E., SES, Chief, Planning & Policy Division CECW-P, (202) 761-0115

**Exhibit D-X**

**Table 1 - FLOOD RISK MANAGEMENT - Costs to be Presented in Chief's Report and Project Partnership Agreements**

CWBS*	Project Cost Component**	Brief Definition	For Chief's Report		For PPA's
			Project First Cost	Economic Cost for BCR	Total Project Cost
			At Current Price Level (MM YYYY)		Fully Funded Estimate
01,02	Lands, Easements, Rights of Way, Relocations, and Dredged Material Disposal Areas (LERRD).	Estimated value/costs of LERRD for the project (to include breakout of related Federal administrative costs).	Y	Y***	Y
03 - 20	Construction Elements	Physical Construction cost estimate broken out by Civil Works Breakdown Structure(CWBS).	Y	Y	Y
30	Planning, Engineering, and Design (post feasibility work)	Estimated costs for post feasibility planning, engineering, and design for the project. This cost should include the estimate of Preconstruction Engineering and Design (PED) phase costs as well as the planning, engineering, and design costs during the construction phase to complete the project.	Y	Y	Y
31	Construction Management	Estimated costs for construction management of project	Y	Y	Y
	Fish and Wildlife Mitigation	Estimated costs of Mitigation	Y	Y	Y
18	Cultural Mitigation	Estimated costs of Mitigation	Y	Y	Y***
By project element	Contingency	This is the Risk Based contingency established for the project.	Y	Y	Y
	Interest During Construction (IDC)	Estimate of interest accumulated during construction(Economic cost)	N	Y	Y
	Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R)	Annualized estimate of Operation, Maintenance, Replacement and Rehabilitation cost.	N	Y	N
	Inflation through midpoint construction	Estimate of inflation using appropriate Civil Works Construction Cost Index System	N	N	Y

**Table 1 - FLOOD RISK MANAGEMENT - Costs to be Presented in Chief's Report and Project Partnership Agreements**

CWBS*	Project Cost Component**	Brief Definition	For Chief's Report		For PPA's
			Project First Cost	Economic Cost for BCR	Total Project Cost
			At Current Price Level (MM YYYY)		Fully Funded Estimate
		(CWCCIS) factors applied to the Total Project Cost			
	Associated Costs	Associated financial costs that are not part of the recommended Federal project but are a necessary non-Federal responsibility. These costs are required to be shown within the Chief's Report as a separate category but are not to be included within the project first costs.	N	Y	N
<p><b>*Civil Works Breakdown Structure</b></p> <p><b>**This matrix is for summary only and not intended to replace any current guidance.</b></p> <p><b>***Note that some relocation assistance benefit payments are not included in the Benefit-to-Cost Ratio (BCR) and that some cultural mitigation costs are not included in Total Project Costs.</b></p> <p><b>Y- included / N- Not include</b></p>					

**Table 2 – ECOSYSTEM RESTORATION - Costs to be Presented in Chief’s Report and Project Partnership Agreements**

CWBS*	Project Cost Component**	Brief Definition	For Chief's Report		For PPA's
			Project First Cost	Economic Cost for BCR	Total Project Cost
			At Current Price Level (MM YYYY)		Fully Funded Estimate
01,02	Lands, Easements, Rights of Way, Relocations, and Dredged Material Disposal Areas (LERRD). ,	Estimated value/costs of LERRD for the project (to include breakout of related Federal administrative costs).	Y	Y***	Y
03 - 20	Construction Elements	Physical Construction cost estimate broken out by Civil Works Breakdown Structure(CWBS).	Y	Y	Y
30	Planning, Engineering, and Design (post feasibility work)	Estimated costs for post feasibility planning, engineering, and design for the project. This cost should include the estimate of Preconstruction Engineering and Design (PED) phase costs as well as the planning, engineering, and design costs during the construction phase to complete the project.	Y	Y	Y
31	Construction Management	Estimated costs for construction management of project	Y	Y	Y
	Fish and Wildlife Mitigation	Estimated costs of Mitigation	Y	Y	Y
18	Cultural Mitigation	Estimated costs of Mitigation	Y	Y	Y***
	Monitoring and Adaptive Management	This represents the estimated costs of monitoring and or adaptive management to be cost shared for the project.	Y	Y	Y
By project element	Contingency	This is the Risk Based contingency established for the project.	Y	Y	Y
	Interest During Construction (IDC)	Estimate of interest accumulated during construction(Economic cost)	N	Y	Y
	Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R)	Annualized estimate of Operation, Maintenance, Replacement and Rehabilitation cost.	N	Y	N

**Table 2 – ECOSYSTEM RESTORATION - Costs to be Presented in Chief’s Report and Project Partnership Agreements**

CWBS*	Project Cost Component**	Brief Definition	For Chief's Report		For PPA's
			Project First Cost	Economic Cost for BCR	Total Project Cost
			At Current Price Level (MM YYYY)		Fully Funded Estimate
	Inflation through midpoint construction	Estimate of inflation using appropriate Civil Works Construction Cost Index System (CWCCIS) factors applied to the Total Project Cost	N	N	Y
	Associated and Other Costs	Associated financial costs that are not part of the recommended Federal project but are a necessary non-Federal responsibility. These costs are required to be shown within the Chief's Report as a separate category but are not to be included within the project first costs.	N	Y	N
<p><b>*Civil Works Breakdown Structure</b></p> <p><b>**This matrix is for summary only and not intended to replace any current guidance.</b></p> <p><b>***Note that some relocation assistance benefit payments are not included in the Benefit-to-Cost Ratio (BCR) and that some cultural mitigation costs are not included in Total Project Costs.</b></p> <p><b>Y- included / N- Not include</b></p>					

**Table 3 –COMMERCIAL NAVIGATION BOAT HARBOR -**

**Costs to be Presented in Chief’s Report and Project Partnership Agreements**

CWBS*	Project Cost Component**	Brief Definition	For Chief's Report		For PPA's
			Project First Cost	Economic Cost for BCR	Total Costs of Construction of GNFS
			At Current Price Level (MM YYYY)		Fully Funded Cost Estimate
01,02	Lands, Easements, Rights of Way, Relocations, and Dredged Material Disposal Areas (LERR).	Estimated costs of LERR for the project.	Y	Y***	N
03 - 20	Construction Elements (General Navigation Features)	Physical Construction cost estimate broken out by Civil Works Breakdown Structure (CWBS).	Y	Y	Y
30	Planning, Engineering, and Design (post feasibility work)	Estimated costs for post feasibility planning, engineering, and design for the project. This cost should include the estimate of Preconstruction Engineering and Design (PED) phase costs as well as the planning, engineering, and design costs during the construction phase to complete the project.	Y	Y	Y
31	Construction Management	Estimated costs for construction management of project	Y	Y	Y
	Fish and Wildlife Mitigation	Estimated costs of Mitigation	Y	Y	Y
18	Cultural Mitigation	Estimated costs of Mitigation	Y	Y	Y***
By project element	Contingency	This is the Risk Based contingency established for the project.	Y	Y	Y
	Interest During Construction (IDC)	Estimate of interest accumulated during construction (Economic cost)	N	Y	Y
	Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R)	Annualized estimate of Operation, Maintenance, Replacement and Rehabilitation cost.	N	Y	N/A

**Table 3 –COMMERCIAL NAVIGATION BOAT HARBOR -**

**Costs to be Presented in Chief’s Report and Project Partnership Agreements**

CWBS*	Project Cost Component**	Brief Definition	For Chief's Report		For PPA's
			Project First Cost	Economic Cost for BCR	Total Costs of Construction of GNFs
			At Current Price Level (MM YYYY)		Fully Funded Cost Estimate
	Inflation through midpoint construction	Estimate of inflation using appropriate Civil Works Construction Cost Index System (CWCCIS) factors applied to the Total Project Cost	N	N	Y
	Local Service Facilities (LSF)	<b>For Commercial Navigation Only:</b> This represents the estimated cost of Local Service Facilities as defined in the Planning Guidance Notebook Appendix E. These are the responsibility of the non-Federal entity and are required as part of the PPA if they are necessary for project benefits to accrue.	N	Y	N
	Associated and Other Costs	Associated financial costs that are not part of the recommended Federal project but are a necessary non-Federal, or other Federal agency, responsibility. These costs are required to be shown within the Chief's Report as a separate category but are not to be included within the project first costs.	N	Y	N
<p><b>*Civil Works Breakdown Structure</b></p> <p><b>**This matrix is for summary only and not intended to replace any current guidance.</b></p> <p><b>***Note that some relocation assistance benefit payments are not included in the Benefit-to-Cost Ratio (BCR) and some cultural mitigation costs are not included in Total Costs of Construction of GNFs.</b></p> <p>Y- included / N- Not include</p>					

**Table 4 - INLAND NAVIGATION - Costs to be Presented in Chief's Report and Project Partnership Agreements**

CWBS*	Project Cost Component**	Brief Definition	For Chief's Report		For PPA's
			Project First Cost	Economic Cost for BCR	Total Project Cost
			At Current Price Level (MM YYYY)		Fully Funded Cost Estimate
01,02	Lands, Easements, Rights of Way, Relocations, and Dredged Material Disposal Areas (LERRD).	Estimated costs of LERRD for the project.	Y	Y***	N/A
03 - 20	Construction Elements (General Navigation Features)	Physical Construction cost estimate broken out by Civil Works Breakdown Structure (CWBS).	Y	Y	N/A
30	Planning, Engineering, and Design (post feasibility work)	Estimated costs for post feasibility planning, engineering, and design for the project. This cost should include the estimate of Preconstruction Engineering and Design (PED) phase costs as well as the planning, engineering, and design costs during the construction phase to complete the project.	Y	Y	N/A
31	Construction Management	Estimated costs for construction management of project	Y	Y	N/A
	Fish and Wildlife Mitigation	Estimated costs of Mitigation	Y	Y	N/A
18	Cultural Mitigation	Estimated costs of Mitigation	Y	Y	N/A
By project element	Contingency	This is the Risk Based contingency established for the project.	Y	Y	N/A
	Interest During Construction (IDC)	Estimate of interest accumulated during construction(Economic cost)	N	Y	N/A
	Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R)	Annualized estimate of Operation, Maintenance, Replacement and Rehabilitation cost.	N	Y	N/A
	Inflation through midpoint construction	Estimate of inflation using appropriate Civil Works Construction Cost Index	N	N	N/A

**Table 4 - INLAND NAVIGATION - Costs to be Presented in Chief's Report and Project Partnership Agreements**

CWBS*	Project Cost Component**	Brief Definition	For Chief's Report		For PPA's
			Project First Cost	Economic Cost for BCR	Total Project Cost
			At Current Price Level (MM YYYY)		Fully Funded Cost Estimate
		System (CWCCIS) factors applied to the Total Project Cost			
	Local Service Facilities (LSF)	<b>For Commercial Navigation Only:</b> This represents the estimated cost of Local Service Facilities as defined in the Planning Guidance Notebook Appendix E. These are the responsibility of the non-Federal entity and are required as part of the PPA if they are necessary for project benefits to accrue.	N	Y	N
	Associated and Other Costs	Associated financial costs that are not part of the recommended Federal project but are a necessary non-Federal, or other Federal agency, responsibility. These costs are required to be shown within the Chief's Report as a separate category but are not to be included within the project first costs.	N	Y	N/A
<b>*Civil Works Breakdown Structure</b>					
<b>**This matrix is for summary only and not intended to replace any current guidance.</b>					
<b>*** Note that some relocation assistance benefit payments are not included in the Benefit-to-Cost Ratio (BCR).</b>					
<b>Y- included / N- Not include</b>					

**Table 5 - COASTAL STORM DAMAGE REDUCTION (use consistent name)- Costs to be Presented in Chief's Report and Project Partnership Agreements**

CWBS*	Project Cost Component**	Brief Definition	For Chief's Report		For PPA's
			Project First Cost	Economic Cost for BCR	Total Project Cost
			At Current Price Level (MM YYYY)		Fully Funded Estimates
01,02	Lands, Easements, Rights of Way, Relocations, and Dredged Material Disposal Areas (LERRD).	Estimated value/costs of LERRD for the project (to include breakout of related Federal administrative costs).	Y	Y***	Y
03 - 20	Construction Elements	Physical Construction cost estimate broken out by Civil Works Breakdown Structure (CWBS).	Y	Y	Y
30	Planning, Engineering, and Design (post feasibility work)	Estimated costs for post feasibility planning, engineering, and design for the project. This cost should include the estimate of Preconstruction Engineering and Design (PED) phase costs as well as the planning, engineering, and design costs during the construction phase to complete the project.	Y	Y	Y
31	Construction Management	Estimated costs for construction management of project	Y	Y	Y
	Fish and Wildlife Mitigation	Estimated costs of Mitigation	Y	Y	Y
18	Cultural Mitigation	Estimated costs of Mitigation	Y	Y***	Y***
	Monitoring and Adaptive Management	This represents the estimated costs of monitoring and or adaptive management to be cost shared for the project.	Y	Y	Y
By project element	Contingency	This is the Risk Based contingency established for the project.	Y	Y	Y
	Continued Construction (periodic renourishment)	<b>For Coastal Storm Damage Reduction Only:</b> Estimate of periodic renourishment cost submitted for authorization.	Y	Y	Y

**Table 5 - COASTAL STORM DAMAGE REDUCTION (use consistent name)- Costs to be Presented in Chief's Report and Project Partnership Agreements**

CWBS*	Project Cost Component**	Brief Definition	For Chief's Report		For PPA's
			Project First Cost	Economic Cost for BCR	Total Project Cost
			At Current Price Level (MM YYYY)		Fully Funded Estimates
	Interest During Construction (IDC)	Estimate of interest accumulated during construction(Economic cost)	N	Y	Y
	Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R)	Annualized estimate of Operation, Maintenance, Replacement and Rehabilitation cost.	N	Y	N
	Inflation through midpoint construction	Estimate of inflation using appropriate Civil Works Construction Cost Index System (CWCCIS) factors applied to the Total Project Cost	N	N	Y
	Associated Costs	Associated financial costs that are not part of the recommended Federal project but are a necessary non-Federal, or other Federal agency, responsibility. These costs are required to be shown within the Chief's Report as a separate category but are not to be included within the project first costs.	N	Y	N
<p><b>*Civil Works Breakdown Structure</b></p> <p><b>**This matrix is for summary only and not intended to replace any current guidance.</b></p> <p><b>*** Note that some relocation assistance benefit payments are not included in the Benefit-to-Cost Ratio (BCR) and some cultural mitigation costs are not included in Total Project Costs.</b></p> <p><b>Y- included / N- Not include</b></p>					